



CREATING INCENTIVES FOR CITY DEPARTMENTS TO SAVE ENERGY

SOLUTION OVERVIEW

In 2008, the City of Philadelphia established the Office of Sustainability. A year later the Office of Sustainability launched the Greenworks Philadelphia sustainability plan. Under the plan, the city set a goal to reduce municipal energy consumption by 30 percent by 2015, using a 2008 baseline. As part of the effort to meet this goal, the city launched the Energy Efficiency Incentive Program (EEIP) pilot in July 2013. The goal of the EEIP pilot was to raise awareness among city departments about energy conservation, provide greater accountability regarding energy use across departments, establish rewards for departments that reduced energy consumption, and address departmental requests for energy conservation incentive opportunities.

The City of Philadelphia uses a centralized bill payment structure where departmental utility bills are managed and paid through the city's general fund. As a result, city departments are distanced from the review and payment process, and the implications of their energy bills. Individual city departments needed a mechanism to better understand their energy footprint, before identifying energy saving strategies. The EEIP pilot provided transparency into each departments' energy use by providing each participating department with a monthly energy performance report. In addition to providing the departments with their energy use information, the EEIP pilot created an incentive structure that allowed each department to keep a portion of its energy cost savings instead of returning all of those savings to the city's general fund. Now armed with the necessary information and incentivized to take action, participating departments developed individualized strategies to cut their energy use that resulted in real energy and cost savings.

Tools:

- [City of Philadelphia's Office of Sustainability](#)
- [Greenworks Philadelphia](#)
- [Energy Efficiency Incentive Program Brochure](#)

COMMUNITY SIZE

Large Urban: Population 1.5 million

GOAL

To incentivize city departments to save energy and contribute to the citywide energy reduction goal outlined in the city sustainability plan.

BARRIER

The city's centralized utility bill payment system distanced individual departments from tracking their energy use and costs, and reduced their motivation to save energy.

SOLUTION

Created the Energy Efficiency Incentive Program pilot, an inter-departmental savings incentive program to share energy use and costs with individual city departments, and reward their energy saving efforts by allowing departments to keep a portion of their energy cost savings rather than returning all of the cost savings to the city's general fund.

OUTCOME

In the first year of the pilot program, departments collectively saved more than \$115,000. Three of five participating departments realized energy and cost savings demonstrating that when armed with the proper information and incentives, similar results can be replicated across a wide range of city departments. The city also learned that targeted outreach with a mix of behavioral and technological solutions was key to each department's success.

POLICIES

Launched in 2009, [Greenworks Philadelphia](#) is the underlying foundation for all of Philadelphia's efforts in building a more sustainable and smarter city. Greenworks is made up of five goal areas—energy, environment, equity, economy, and engagement—as well as 14 measurable targets, and 164 initiatives:

1. Lower City Government Energy Consumption by 30 Percent
2. Reduce Citywide Building Energy Consumption by 10 Percent
3. Retrofit 15 Percent of Housing Stock with Insulation, Air Sealing, and Cool Roofs
4. Purchase and Generate 20 Percent of Electricity Used in Philadelphia from Alternative Energy Sources
5. Reduce Greenhouse Gas Emissions by 20 Percent
6. Improve Air Quality toward Attainment of Federal Standards
7. Divert 70 Percent of Solid Waste from Landfill
8. Manage Stormwater to Meet Federal Standards
9. Provide Walkable Access to Park and Recreation Resources for All Philadelphians
10. Provide Walkable Access to Affordable, Healthy Food for All Philadelphians
11. Increase Tree Coverage Toward 30 Percent in All Neighborhoods by 2025
12. Reduce Vehicle Miles Traveled by 10 Percent
13. Increase the State of Good Repair in Resilient Infrastructure

14. Increase the Size of the Regional Clean Economy by 25 Percent

As part of this broad strategy to meet the goals outlined in Greenworks, the city developed the EEIP in February 2013, and officially launched the program as a pilot in July 2013, for a period of two years.

Tools:

- [Greenworks Philadelphia](#)

PROCESS

Creating the Energy Efficiency Incentive Program Pilot

The city's Budget Office approved the EEIP in February 2013, and the pilot program was launched in July 2013, which ran for two years. The first year involved outreach, education, and engagement to initially launch the program. The second year served as a monitoring year, where departments evaluated their energy usage each month. The city's Energy Office coordinated with the Budget Office to establish the pilot and set up budgeting channels to apply energy cost savings to individual departments. Five departments were selected to launch the pilot program: Parks and Recreation, Health, Public Property, Police, and Fire. The departments were selected based on their high electric consumption and resulting energy savings potential, but also the benefits that would come from their partnership such as: improving public property buildings which are some of the city's largest facilities, improving police and fire stations, and the potential to set a great example with Parks and Recreation, which is one of the most active departments in sustainability efforts. The program was started as a pilot in order to establish proof of concept for operations, provide estimates of savings potential, and improve program design and support.

- The Energy Office staff first organized an introductory meeting with the Commissioners of the five pilot departments. EEIP pilot leads representing each department were selected internally by the departments. Energy Office staff coordinated with each lead to craft a targeted strategy appropriate for each department. These strategies were developed through separate meetings with each department's EEIP pilot lead to identify the maximum energy saving efforts of which the departments felt they were capable.
- The Energy Office utilized three internal staff, one University of Pennsylvania associate, and a local benefit corporation to identify energy saving opportunities and discuss results with individual departments. The city already uses an energy management database to track utility bills, but received additional data collection and weather normalizing metric support from staff from the University of Pennsylvania School of Design. The local benefit corporation had experience in conservation programs in area schools, and assisted in creating curriculum and messaging for specific departments.
- Once the strategies were established for each department, the Energy Office staff handled collecting, weather normalizing, and analyzing electric use data, calculating energy cost

savings, coordinating with the Budget Office to confirm savings, and providing support to the five pilot departments as needed through training, outreach, and education. The Energy Office provides monthly energy reports to help departments track their individual energy performance.

How it Works

The Energy and Budget Offices collaborated to track, measure, and benchmark each department's electricity usage. Each department's current electricity usage is benchmarked against a three year rolling average of electricity usage. For example, fiscal year (FY) 2015 electricity usage is benchmarked against the average of FY 2012-2014 electricity usage. FY 2016 electricity usage would be benchmarked against the average of FY 2013-2015. All data is measured in kilowatt-hours (kWh), since only electricity usage is addressed in the pilot program. Operational changes were taken into account when measuring electricity usage and the usage data is normalized for weather variances and energy pricing anomalies. Decreases in electricity consumption equated to calculated earned dollars for each department by using the department's budgeted cost per kWh.

The Energy and Budget Offices determined the calculation for the reallocation of savings. Due to the nature of budget cycles, the realized savings are allocated to a future budget year. An Energy Bank was set up for each department to "bank" a portion of their energy cost savings as an additional incentive. The department's Energy Bank balance is monitored by the city's Budget Office, and the Energy Office supplies each department with a monthly energy report to ensure continuous energy management.

At the end of each twelve-month period, savings for each department are calculated for the year. If there is a positive savings, the funds are distributed as follows: 50% energy cost savings to the city's general fund, 25% to the department, and 25% to the department's Energy Bank. If the department increased its electricity consumption, 50% of the electricity cost increase is absorbed by the city's general fund and 50% by the department's Energy Bank. A portion of savings are deposited in the Energy Bank until 5% of the department's current spending on electricity is reached. Once the department reaches the maximum deposit in the Energy Bank, the savings to the department increases to 50% from 25%; if the Energy Bank falls below this threshold, the savings distribution defers to the original allocation (50% general fund, 25% department, 25% Energy Bank) until the maximum deposit is reached again. The department's savings balance is distributed at the beginning of each fiscal year. The department is encouraged to put the savings balance toward energy efficiency projects.

Departments are not held to specific savings goals. The Energy Office supports the initiatives, ideas, and individual approaches developed by each department. During the pilot phase, the Energy Office was most focused on maximizing participation. Outreach efforts have helped to keep participation going. As mentioned, the Energy Office sends monthly energy consumption data reports out to each department to help them track progress in the EEIP pilot.

Staff Resources

Time is the primary cost associated with this pilot program. Time was spent working with the Budget Office to establish the program; meeting with Department Commissioners and staff; providing outreach to Fire Stations across the city (requested by the Fire Department as part of their strategy); collecting, weather normalizing and analyzing electric use data; calculating energy cost savings; coordinating with the Budget Office to confirm savings numbers; and providing support to the five pilot departments as needed. The Energy Office was able to leverage existing partnerships and relationships to offset costs associated with program set up and analysis.

Tools:

- [Philadelphia Energy Efficiency Incentive Program Presentation](#)
- [Philadelphia Parks and Recreation Department Monthly Energy Bill](#)
- [Philadelphia Energy Bank Slide](#)

OUTREACH

As a program that extends across several departments, the Energy Office acknowledged the need to collaborate effectively. The Energy Office began with an introductory meeting with Department Commissioners of the five pilot departments and identified the pilot program leads for each. Energy Office staff coordinated with each lead to develop a unique energy savings strategy tailored to each department. Each strategy was crafted to meet individual department conservation goals.

Specifically, the [Fire Department](#) crafted the strategy so that staff could make similar behavioral adjustments at the stations and at home, and presented separate trainings at each Fire Station. The trainings focused on turning off lights, computers, and appliances when not in use, and improving efficient use of air conditioning and heating.

The [Parks and Recreation Department](#) implemented several policies, and requested that the Energy Office attend district meetings to present to staff on the importance of these policies. Several top-down approaches were also incorporated; for example, the Fire and Police Department Commissioners issued [formal memos to their members](#). And the Parks and Recreation Department Commissioner created a [video message](#) relaying the budgetary and environmental importance of energy conservation measures. The Parks and Recreation Department used the video in workshops.

In addition, the Energy Office holds an annual event, the [Energy Initiatives Reception](#), to re-cap energy successes across the city. This reception is dedicated to recognizing and awarding city departments and their employees for outstanding energy savings. In February 2015, two new awards were issued to pilot participants; the Parks and Recreation Department received “[Most effective lighting policy](#)” and the Health Department received “Most effective equipment procurement policy.”

- The Parks and Recreation Department was awarded for developing, implementing, and holding staff accountable to an energy-savings lighting policy. Through its participation in EEIP pilot, Parks and Recreation established a lighting policy that requires a schedule for using field lights and holds staff accountable if the schedule is not followed. Thanks to this successful policy, the department saw 85,000 kWh and \$8,041 in cost savings in FY14,

compared to its average consumption over the previous three years.

- The Health Department was awarded for developing and implementing an energy-saving equipment procurement policy which entailed the purchase of ENERGY STAR qualified equipment when buying any new equipment. Thanks to this policy, the department saw over 900,000 kWh and \$107,735 in cost savings in FY14, compared to its average consumption over the previous three years.

Tools:

- [Philadelphia Fire Department Workshop](#)
- [Philadelphia Parks and Recreation Department Workshop](#)
- [Philadelphia Commissioner Sample Memo](#)
- [Philadelphia Parks and Recreation Department Commissioner Video](#)
- [Philadelphia Energy Initiatives Reception Blog Post](#)
- [Philadelphia Parks and Recreation Department Award](#)

MEASURING SUCCESS

The desired outcome of the EEIP pilot is for departments to understand their energy usage and to develop their own targeted energy saving strategies in order to directly benefit from energy cost savings. The Budget and Energy Offices collect and review energy use data annually through the city's energy management software to evaluate individual departmental energy savings. The Budget Office reviews data to determine the allocation of energy cost savings to be deposited into the departmental energy banks at the end of a twelve-month period. The Energy Office coordinates with participating departments to gather feedback on their energy saving efforts.

More regular communication around energy use and cost has precipitated progress for all parties. And it has allowed the Energy Office to guide departments to other energy efficiency project funding. Successful department activities serve as best practices for other city departments to emulate.

OUTCOMES

By the end of the first pilot program year, three of the five participating departments realized savings.

The Health Department developed and implemented an energy-saving equipment procurement policy, which requires the purchase of ENERGY STAR qualified equipment (if possible) when buying any new equipment.

Energy and Cost Savings:

- 900,000 kWh (7.7% reduction in kWh)
- \$107,735

The Parks and Recreation Department developed, implemented, and held staff accountable to an energy-saving lighting policy. Parks and Recreation requires a schedule for using field lights and

holds staff accountable if the schedule is not followed.

Energy and Cost Savings:

- 85,000 kWh (0.3% reduction in kWh)
- \$8,041

The Department of Public Property saw savings over the course of the pilot, but was simultaneously engaged in a Guaranteed Energy Savings Project (GESp), so any incurred energy savings counted toward the GESp and were not deposited into the department's Energy Bank.

The Police Department and the Fire Department did not realize energy savings, but were successful in increasing energy conservation awareness through educational trainings – each of the 52 fire stations participated in educational demonstrations through presentations developed by the EEIP pilot leads and the Energy Office. Additionally, by simply developing the EEIP pilot and placing energy conservation on city department agendas, all departments have benefited from increased awareness of energy efficiency, overall sustainability efforts, and peer best practices.

Overall, the City of Philadelphia learned valuable lessons from the EEIP pilot—lessons which can prove useful to other jurisdictions across the country. For one, the city found that energy conservation is best accomplished through a combination of behavioral and technological changes. Philadelphia's experience demonstrated that behavioral trainings, e.g. turning off lights, are the most rapid way to reduce energy consumption, while technological solutions, e.g. installing energy efficient equipment, earn additional savings over time.

Second, the city learned that stakeholder engagement and communication is a strategic process. Depending on the culture and organization of departments, the energy conservation message and training medium varied across offices. Department leads recognized the need to consult with the Energy Office on a case-by-case basis to determine whether a top-down, bottom-up, or a blend of approaches was most appropriate. Engaging with staff also offered insight on the varying needs and procedures of each department; Police and Fire Departments maintain very different operating schedules than other government agencies, which pose challenges to behavioral adjustments.

Third, the city quickly encountered challenges conducting intensive outreach with only a three-member staff. The Energy Office surmised that a larger staff could broaden their outreach capacity.

And last, as with all governmental entities, administration turnover strongly influences a jurisdiction's direction and agenda. In the midst of new administration, the Energy Office looks forward to continuing to tout the successes of the EEIP pilot as an effective way to encourage the city's departments to reduce energy use and save taxpayer dollars well into the future.

TOOLS AND RESOURCES

- [City of Philadelphia's Office of Sustainability](#)
- [Greenworks Philadelphia](#)
- [Philadelphia Energy Efficiency Incentive Program Brochure](#)
- [Philadelphia Energy Efficiency Incentive Program Presentation](#)

- [Philadelphia Parks and Recreation Department Monthly Energy Bill](#)
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